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LUCEO REFLECTORS

Made from our new
LUCEO GLASS

Moonstone

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DESIGN DIV.

The Jefferson Glass Company
Follansbee ··· West Virginia

Trade Marks and Designs
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Luceo Reflectors

The reflector plays so important a part in the use of artificial light that it has been said—if partially in jest, at least with a large measure of seriousness,—that "illuminating engineering is the science of reflectors." It is certainly true that if the reflector best suited to the particular form of lamp used, and to the location and purpose for which the illumination is required, were rightly chosen, the most common and serious faults in illumination would cease to be found.

The word "reflector" is somewhat misleading and inadequate, but the word "shade," so commonly used, is still more vague. The reflector, in the great majority of cases, must do more than merely reflect. If reflection were its only purpose, silvered glass and polished metal would be all that was required. Besides reflecting, the reflector for general illuminating purposes must transmit a certain amount of light and must also act as a "shade," or diffuser.

In addition to these practical qualities, a reflector must also be easy to keep clean, and possess in as large a measure as possible decorative and artistic merit.

In presenting our Luceo reflector to the public we believe that we have combined these requisites to an exceptionally high degree.

Luceo Glass is characterized by a peculiar limpid translucency that very closely resembles the purest specimens of white onyx; while the surface, as seen by reflected light, possesses the waxy gloss characteristic of the same natural product. It is therefore possible to leave the natural surface gloss without roughening with acid or sand-blasting, and still avoid the "vulgar shine" of the ordinary glazed surface on the one hand, and the ease of soiling and difficulty of cleaning on the other.

Luceo reflectors are shades as well as reflectors, i.e., they are ideal diffusers of light, the low coefficient of absorption being one of the most remarkable characteristics of this new glass.

From the practical standpoint Luceo reflectors possess two qualities which add greatly to their general usefulness. First, they do not readily collect dust or soil, and when cleaning does become necessary it can be performed with the minimum of trouble and expense. Only in rare cases, or at long intervals is it ever necessary to remove the reflector from its holder in order to give it a thorough cleaning, both the smooth surface and the contour of the design contributing to this advantage. The reduction in efficiency of reflectors having a roughened, or matt surface is in most cases rapid and severe, and constitutes a large item in the expense of maintenance. Actual scrubbing with soap and water is the only effective method of cleaning such surfaces, while simply wiping with a dry cloth suffices under all ordinary conditions with Luceo Glass.

The other point of advantage is, that Luceo Glass, by reason of its peculiar surface and composition, does not require the light-source to be accurately placed, or focused. The distribution of light is all that could be desired for all purposes of illumination, except some special and unusual problems, and this distribution is not appreciably modified by any ordinary variation in the position of the lamp.

Another admirable quality is the entire absence of any color effect. In other words, the reflector when lighted has the exact color of the light-source within, showing no streaks or variations.

We call particular attention to the high absolute efficiency of Luceo reflectors, and to the fact that the transmitted light is ample to prevent dark ceilings, which invariably give an appearance of gloom to a room, no matter how brilliantly the floor may be illuminated.

Our present line consists of two types of reflectors, giving wide and medium angles of distribution, as shown by the accompanying photometric curves, and hemispheres, which can be used singly as ceiling bowls, or joined together to form spheres.

Luceo reflectors are confidently recommended for all cases where modern incandescent electric lamps are to be used for general interior illumination, whether in the store, the office, the factory, or the home.

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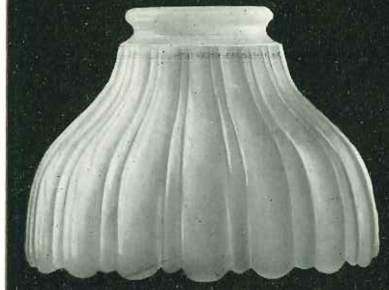
Luceo Reflectors

Bowl Types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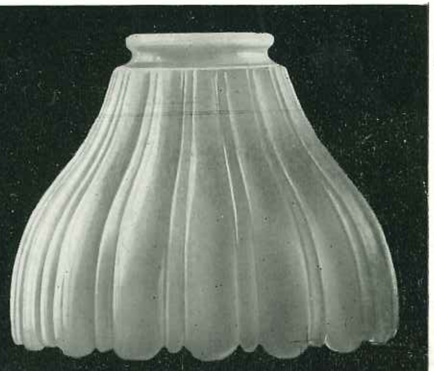
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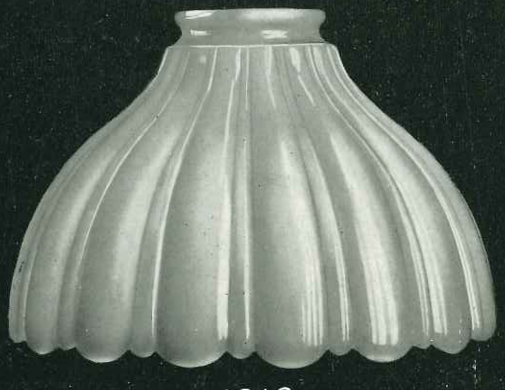
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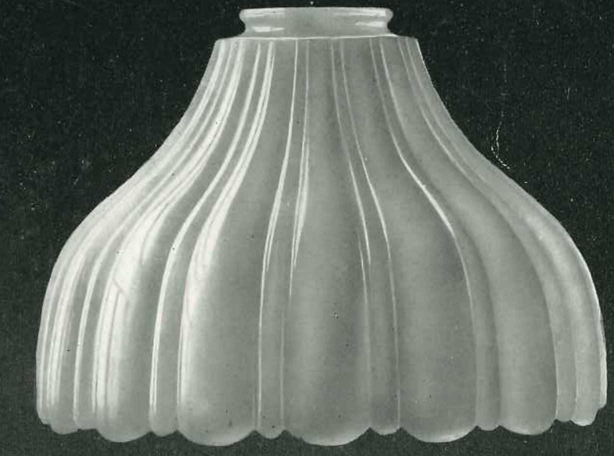
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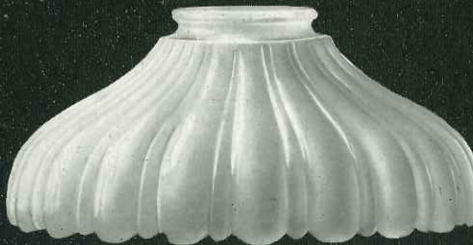
Luceo Reflectors

Flared Types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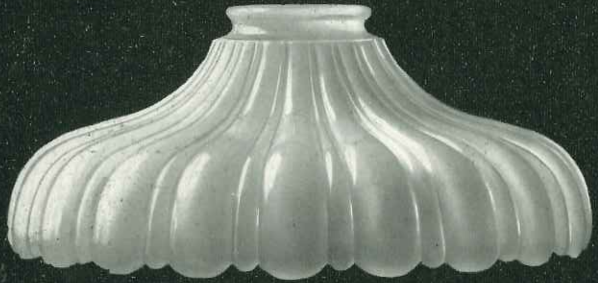
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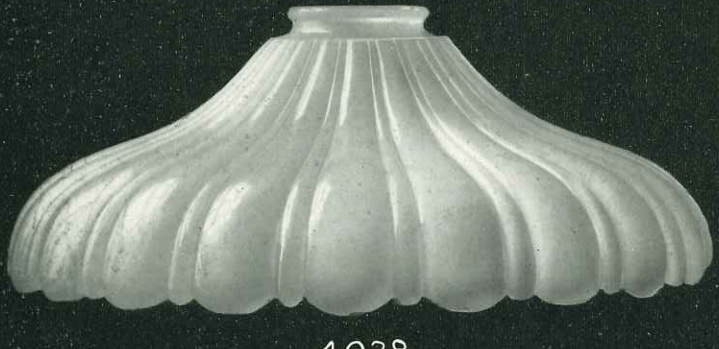
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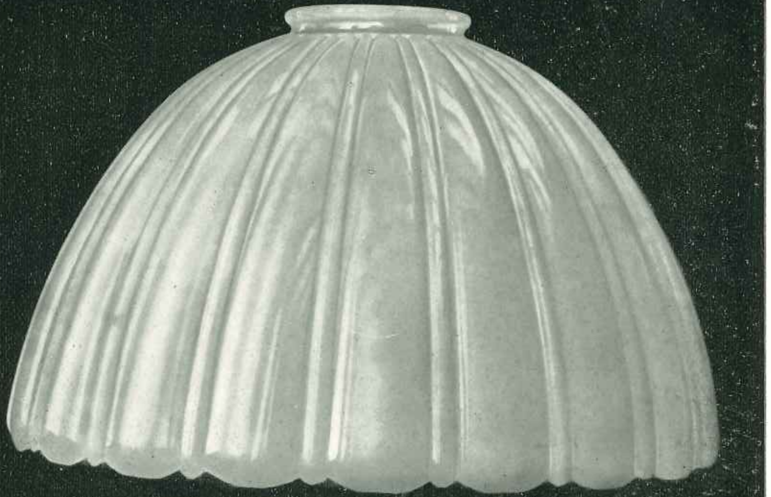
Luceo Reflectors

For Large Tungsten Lamps—also Inverted Gas Shade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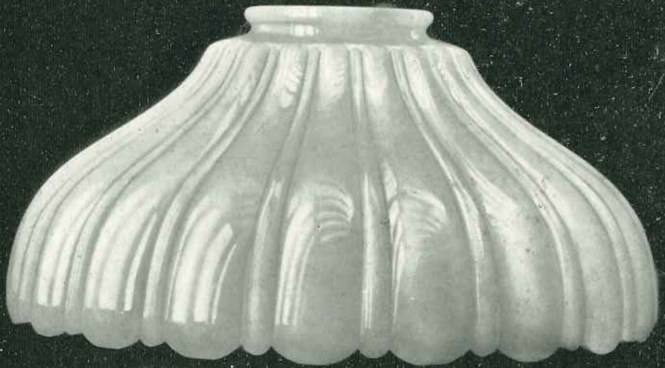
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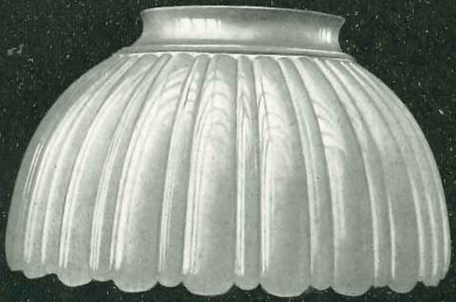
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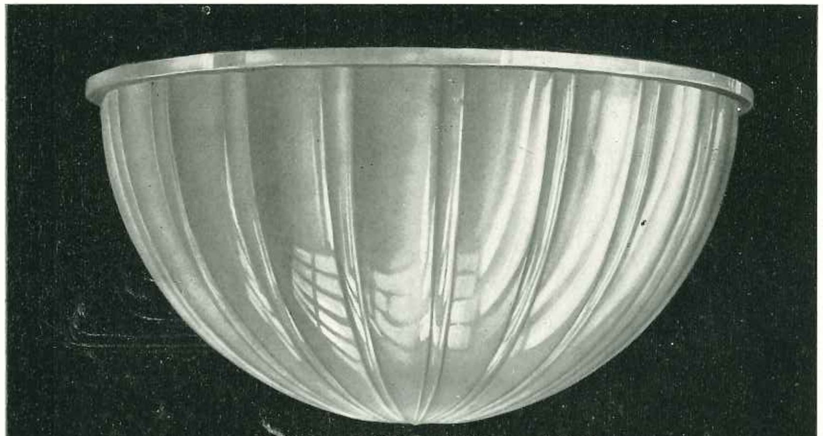
Luceo Ceiling Bowl and Ball Globe



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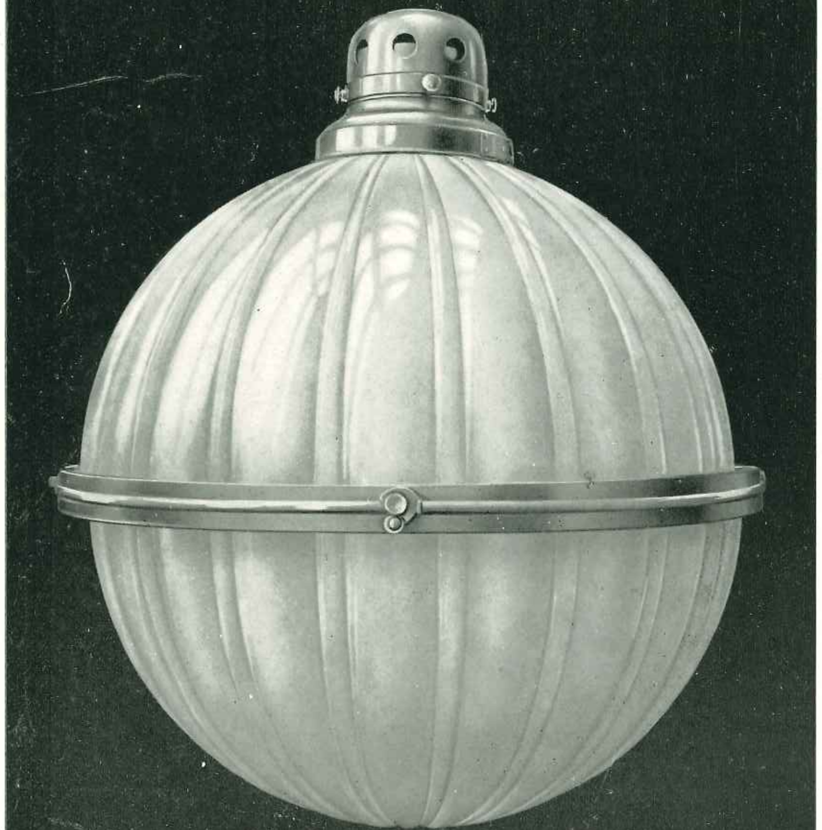
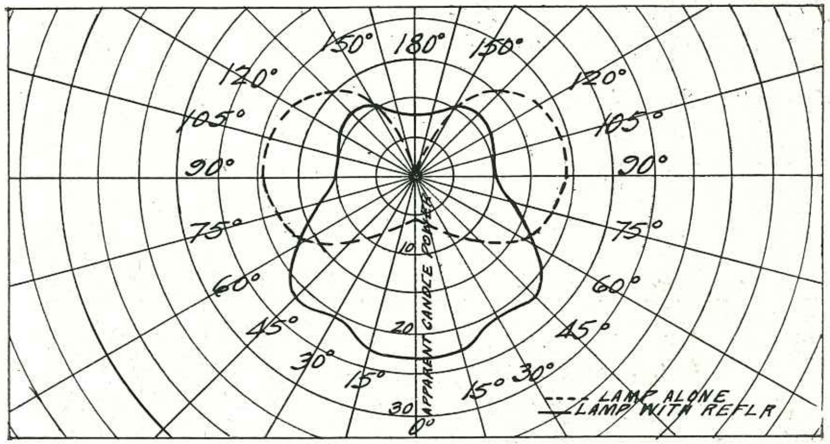


484-485-486-487

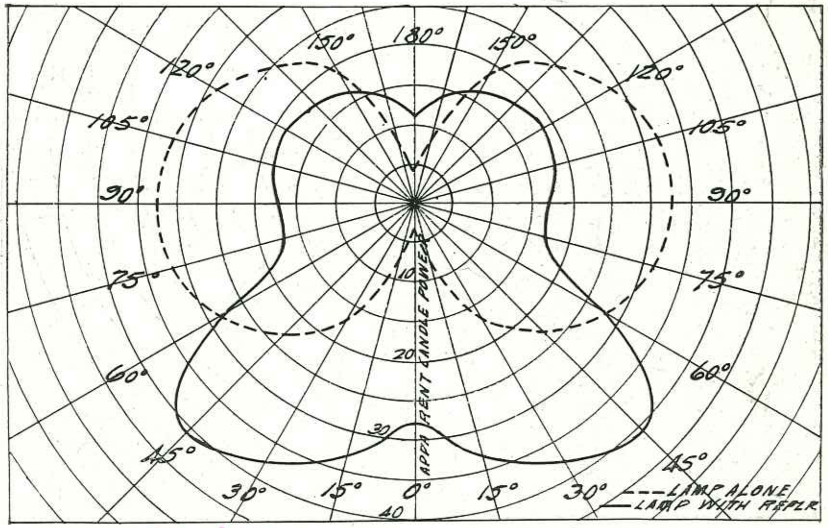
Mean Vertical Distribution Curves of Luceo Reflectors

from tests by the

Electrical Testing Laboratories, New York



No. 4005 with 25 Watt Bowl Frosted Tungsten Lamp.



No. 4008 with 40 Watt Clear Bulb Tungsten Lamp.

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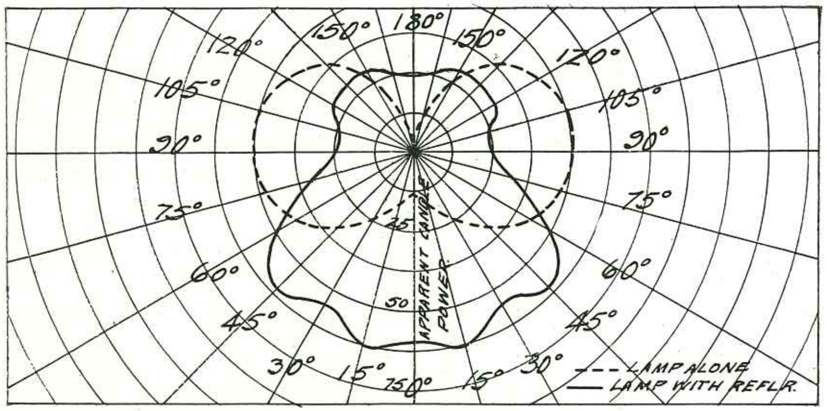

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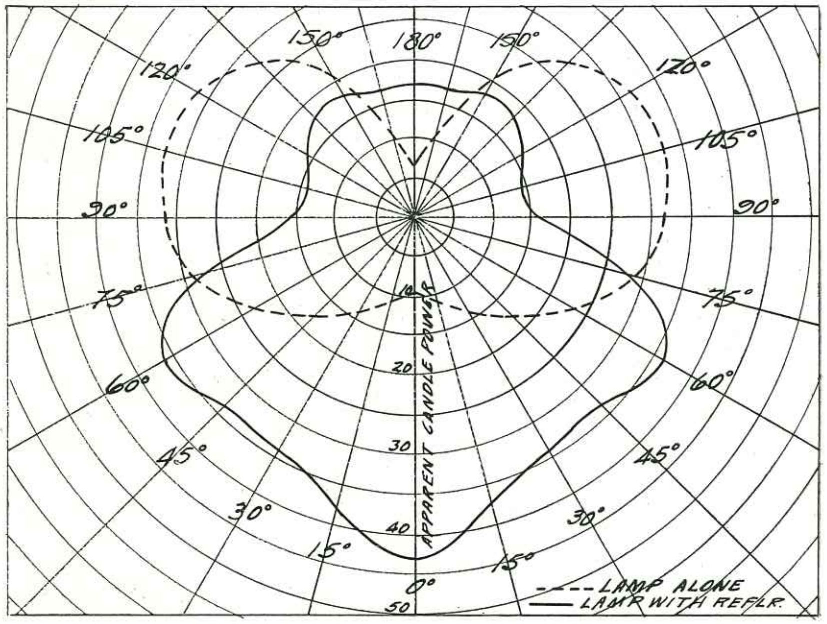

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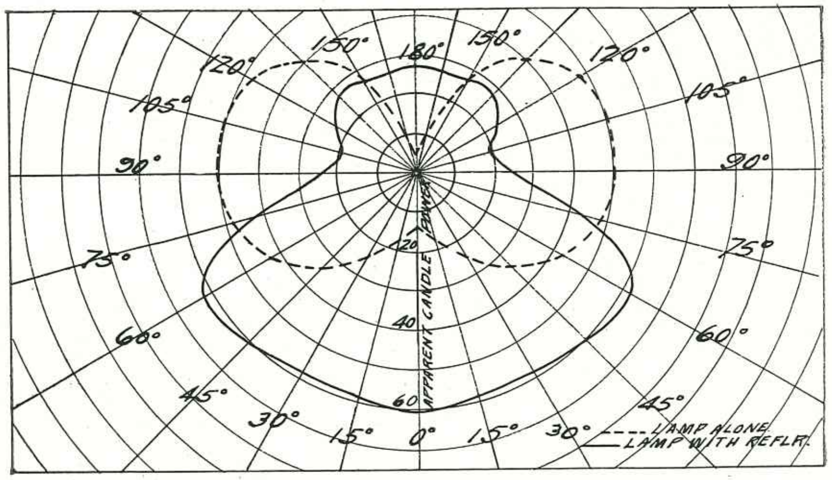
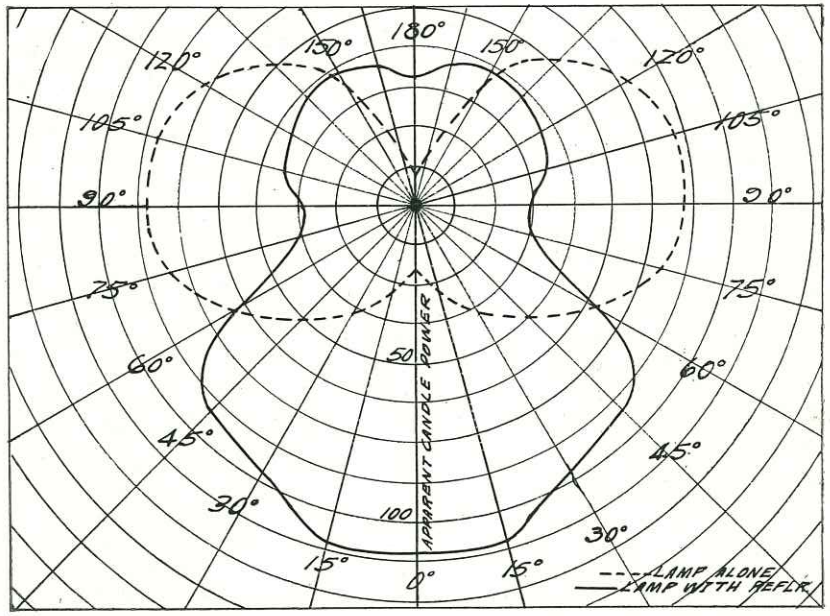
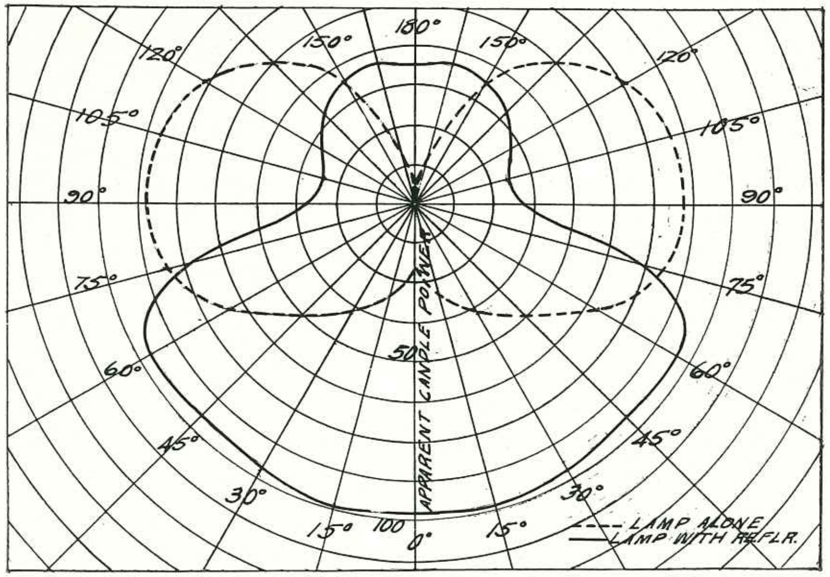


No. 4024 with 60 Watt Bowl Frosted Tungsten Lamp.



No. 4026 with 100 Watt Bowl Frosted Tungsten Lamp.



No. 4038 with 100 Watt Bowl Frosted Tungsten Lamp.

Illuminating Engineering Data

The table given below will furnish all the mathematical data necessary for determining the proper reflector and size of lamp for any particular installation. The figures are taken from the results obtained by the Electrical Testing Laboratories, as exhibited in the foregoing curves.

Catalogue number of reflector	Size of lamp	Mean Spherical c. p. of lamp	Total flux of lamp in lumens	Total flux with reflector	Percentage of absorption	Flux in lower hemisphere	Effective lumens
4008	40*	25.5	320.5	284	11.4	172	112.6
4010	60	39.6	488	461	7.4	292	181
4026	100	66.4	833	710	15.0	427	288.6
4038	100	65.8	827	749	9.5	520	302
4024	60	40.3	506	466	8.0	320	186.2
4005	25	14.9	187	168.5	10.0	104.2	64.1
4020	40	25.1	316	286	9.4	189.5	110.0

*Clear Bulb Lamp; all others bowl frosted.

The most convenient and accurate method, based on experience, for determining the size and number of lighting units required to produce a desired amount and intensity of illumination is by the use of "effective light flux" factors or "experience factors." Working back from illuminometer measurements of the illumination effective on the usual theoretical "working plane" 30 inches from the floor, which is the height of the ordinary table, desk or counter, that proportion of the total quantity of light from the unit (lamp and reflector) is readily determinable. Ordinarily this quantity is from 50% to 70% of the total light generated, the 30% to 50% being the necessary proportion of the light which must be directed towards the walls and ceiling and the unavoidable losses in the reflectors due to absorption.

It may be noted on reference to the table on the preceding page that these absorption losses with Luceo glass have been reduced to a minimum and are a smaller percentage of the total light than has heretofore been considered possible with translucent reflectors of similar shape. The light in the upper hemisphere is ample and proportionately correct to insure that intensity of illumination on the side walls and ceiling which is so necessary in obtaining the properly balanced contrast effects, preventing the suggestion or appearance of darkness and gloom.

The flux factors, given below are actually the effective lumens per watt.

Luceo reflectors (wide and medium distribution types) with the proper size Mazda or tungsten lamps, at "high operating efficiency" or "top voltage,"

Installation conditions		Flux factors
Ceiling	Walls	Lumens per watt
light	light	5.3
light	dark	4.0

With lamps at other than the "high operating efficiency" the above flux factors should be changed. The corrections being proportional to the lumens per watt rating of the lamps and the present rating of

7.4 lumens per watt for the 25 watt size
8.0 " " " " " 40 " "
8.3 " " " " " 60 and 100 watt size,

or inversely proportional to the ratio of the watts per candle rating of

1.31 watts per candle for 25 watt lamps
1.23 " " " " 40 " "
1.18 " " " " 60 and 100 watt lamps.

The method of estimating the number of units required is very simple and direct. Suppose that it is desired to illuminate a room 16 x 50 ft. with an average intensity of two foot-candles. Two foot-candles is the intensity of illumination on a surface at one foot distant from a source of two candle-power, and the lumen is the quantity of light required to illuminate a surface of one square foot with an intensity of one foot-candle. It will therefore require an effective flux of two lumens to illuminate each square foot of the area considered with an intensity of two foot-candles; and as we have an area of 16 by 50 feet, or 800 square feet, it will require 1600 effective lumens to furnish the desired illumination.

With "light ceiling" and "dark walls" the total watts required would be 1600 divided by the factor 4, or 400 watts. $\frac{800 \times 2}{4} = 400.$

This could be divided into 4-100 watt; 10-40 watt, or 7-60 watt lamps; permitting a choice either from the standpoint of lamps of a certain size or a certain number of lamps.

The height and spacing can very readily be taken care of by those having experience with high efficiency reflectors.

Illuminating engineers will appreciate the quality of this glass, its high efficiency, and the wide range of application afforded by the sizes and shapes of Luceo reflectors illustrated on the preceding pages.

Price List of Luceo Glassware

	Dozen per Barrel	Price per Dozen
No. 4005 Size 5 in. Diameter—3½ in. Deep—2¼ in. Holder. Recommended for use with 25 or 40 Watt Lamps with Short holders.	6	$10.00
No. 4008 Size 5¾ in. Diameter—4⅝ in. Deep—2¼ in. Holder Recommended for use with 40 Watt Lamps with Short Holders.	5	$10.00
No. 4010 Size 7¼ in. Diameter—4¾ in. Deep—2¼ in. Holder. Recommended for use with 60 Watt Lamps with Form H or Long Holders.	4	$12.00
No. 4014—Inverted Gas Reflector with Metal Collar. Size 7¼ in. Diameter—3½ in. Deep—3⅜ in. (Scant) Holder. For Inverted Gas Burners or Electric 3 ¼ in. Holders. Including Metal Collars.	3½	$12.00
No. 4020 Size 7⅛ in. Diameter—3⅛ in. Deep—2¼ in. Holder. Recommended for use with 25 or 40 Watt Lamps with Short Holders.	5	$10.00
No. 4024 Size 9⅛ in. Diameter—3⅝ in. Deep—2¼ in Holder. Recommended for use with 60 Watt Lamps with Form H or Long Holders.	2½	$12.00
No. 4026 Size 8 in. Diameter—6⅛ in. Deep—2¼ in. Holder. Recommended for use with 100 Watt Lamps with Form H or Long Holders.	2	$17.50

Price List of Luceo Glassware

Continued

	Dozen per Barrel	Price per Dozen
No. 4028 Size 11 in. Diameter—5⅜ in. Deep—Form H 3¼ in. Holder. Recommended for use with 150 Watt Lamps.	1	$24.00
No. 4029 Size 12 in. Diameter—7½ in. Deep—Form H 3¼ in. Holder. Recommended for use with 250 and 400 Watt Lamps.	½	$36.00
No. 4031 Size 13¾ in. Diameter—9 in. Deep. Brass Adjustable Holder. Recommended for use with 400 and 500 Watt Lamps. Similar in shape to No. 4029 and complete with adjustable brass holder.	⅓	$100.00
No. 4038 Size 11 in. Diameter—4½ in. Deep—2¼ in. Holder. Recommended for use with 100 Watt Lamps with Form H or Long Holder.	1½	$17.50

Hemispheres or Ceiling Bowls

No. 480— 8 in. Diameter—4 in. Deep	**$18.00**
No. 481—10 in. Diameter—5 in. Deep	**$28.00**
No. 482—12 in. Diameter—6 in. Deep	**$42.00**
No. 483—14 in. Diameter—7 in. Deep	**$94.00**

If desired hole in center can be drilled as specified.

Two-piece Ball Globes Complete

For 100, 150, 250, 400 and 500 Watt Lamps.

No. 484— 8 in. Diameter— 8 in. Deep	**$7.00 Each**
No. 485—10 in. Diameter—10 in. Deep	**$8.50 Each**
No. 486—12 in. Diameter—12 in. Deep	**$11.00 Each**
No. 487—14 in. Diameter—14 in. Deep	**$20.00 Each**

Prices include adjustable Brass Holder and Hinged Connecting Band.

Brush Brass Finish.

This globe is furnished with one inch hole in the bottom hemisphere (for ventilation) unless otherwise specified.

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